

GOAT FARM BUDGETING

Roger Sahs

Extension Assistant

*Agricultural Economics
Oklahoma State University
Stillwater, OK 74078*

Introduction

Management is the most important factor in the success of any farm operation. Profit maximization is traditionally assumed to be the overriding goal in most management decisions. In reference to the economic feasibility of a goat enterprise, producers should understand the probable cost and returns of such an operation, the profit equation, financial and production risk, and potential alternatives. Questions may arise as to whether goats will help supplement farm income or if a larger goat operation is even technically feasible. Enterprise budgets are designed to provide a decision framework for assessing both short- and long-range economic analyses of production agriculture.

Three basic types of budgets can assist with the farm and financial planning process. Each type of budget provides different information to the manager for use in the decision making process. Like a puzzle, each budget brings to the table an important piece that will help address how available resources best fit together on the farm. Specific questions such as how and what to produce, production levels, and achieving goals can then be answered once the puzzle is completed.

Whole-Farm Budgets

How to best organize and manage the farm business in a manner that is consistent with the goals and objectives of the farm family are vital issues in charting the future direction of the farm organization. The decision as to whether the enterprise in question will help achieve goals rests on the farm family acting as managers. OSU Circular E-887, "Goal Setting for Farm/Ranch Families", can help with the process of farm and family goal creation, prioritization, and the maximization of resources owned or controlled by the operator.

The whole-farm budget is a summary of the major physical and financial components of the entire farm business. The budget identifies the resources available to the farm business and assists in the selection of overall management strategies that complements the goals in mind. More information on whole-farm budgeting can be found in OSU F-139, "Budgets: Their Use in Farm Management".

Enterprise Budgets

An enterprise budget incorporates information about the specific resources, management practices, and technology used in the production process. More specifically, an enterprise budget illustrates the expected costs and returns, inputs and production, and timing for a particular farming activity. Among the various uses for enterprise budgets are:

1. Evaluating options before a commitment of owned or controlled resources.
2. Estimating potential income for a particular farm.
3. Estimating the size of farm needed to earn a specified return.
4. Uncovering costs that have not been previously considered.
5. Providing the documentation necessary to obtain/maintain creditworthiness.
6. Learning how to better organize and reorganize.
7. Comparing the profitability of two or more different systems of production.
8. Estimating the amount of rent that can be paid for land or machinery.
9. Identifying production and financial risks and whether they may be managed.
10. Projecting cash flows for a specific period of time.

Enterprise Budgets - Components and Concepts

Budgets estimate the full economic costs and returns projected to accrue to an enterprise. The goat budgets (Tables 1 and 2) are provided to assist goat producers in estimating their costs of production. Unless costs of production are known, you will not even realize if you are making a profit. And like the old adage says, “Nobody ever went broke while making a profit”. Profit is shown as residual earnings in these budgets and will be discussed in greater detail later. The column at the right of the budget (Your Value) may be used by an individual to make planning adjustments.

The front page of the Oklahoma State University livestock enterprise budget contains a summary of operating inputs, fixed costs, and production. These values represent the economic outcome expected for a production period. Details of monthly operations, as well as monthly labor and capital requirements, are provided on the second page.

Three general types of costs comprise the total cost of producing any type of farm commodity. They are variable (operating), fixed, and overhead expenses. Overhead expenses are difficult to allocate among individual enterprises. Examples include telephone, electricity and accounting services. Overhead expenses are included in whole-farm budgets, but are generally excluded (as shown in the goat examples) in enterprise budgets. Variable costs are illustrated in operating input section while fixed expenses are shown in the fixed cost section.

Variable Costs

Variable costs are those operating inputs which vary as the level of production changes. They are items that will be used during one year's operation or one production period. They would not be purchased if production is not undertaken. Variable costs may also be classified as cash or non-cash in nature. For instance, labor expenses are included in the operating input section. An assumption is made where there is no differentiation made between owner supplied or hired labor. If the farm operator or his family supplies the labor, a wage rate that represents a salary if employed elsewhere would be shown.

Fixed Costs

Fixed costs are those that do not change with the level of production. Generally, fixed costs are those ownership costs associated with buildings, machinery, and equipment which are pro-rated over a period of years. Fixed costs may also be cash or noncash in nature. Real estate taxes, personal property taxes, and insurance on buildings are examples of cash fixed costs. Noncash costs such as depreciation and interest on capital investments result in foregone opportunities. A closer inspection of the fixed costs in a typical livestock budget follows.

The interest charge for durable assets such as machinery, equipment, and breeding livestock used in the goat operation is based on the average amount of capital invested over the ownership period, usage per year, and an interest rate. Money that is tied up in these capital assets could have earned a return in an alternative use. This foregone opportunity is what economists define as opportunity costs and reflects a payment to the farmer's owned resources.

Depreciation represents an attempt to spread the investment costs or purchase price of durable assets over their productive lifetime. It is typically the largest cost associated with ownership. For example, when a tractor is worn out, it should be completely "paid for" by depreciation. A producer must, in effect, save this much every year or reinvest it in machinery and equipment, or he will eventually find himself with worn out items and no cash reserves to replace them.

Taxes vary by region but are generally a function of average value. In the goat budgets, the annual charge for taxes is based on 1% of the purchase price.

Insurance policies are usually carried on more expensive machines while the risk of loss is usually assumed by the farmer on the simpler, less expensive assets. The insurance costs are based on the average amount of capital invested times an insurance rate.

Production

The total quantity of production is multiplied by the actual or expected price to determine a value for production. In the goat budgets, the expected returns to the 100 doe unit are averaged for reporting on a per doe basis. This averaging process yields a realistic estimate of the per doe returns to

the herd given death loss, replacement rates, and kidding percentages.

Returns Above Total Operating Costs

The returns to fixed cost, land, risk, and management is computed by subtracting total operating costs from total receipts. As long as returns are greater than total operating costs, production is economically rational for an enterprise already in production. As shown in the goat budgets, both operations generate enough revenue to more than offset variable costs.

Returns Above All Specified Costs

In determining overall enterprise profitability, fixed costs also have to be part of the profit equation. Returns to management, land, and risk is calculated by subtracting total variable and fixed costs from operating revenues. This amount is residual earnings to the producer for management and to land (because land/pasture costs can have a large variation within a region, the goat budgets show no land cost). Each individual must decide whether this return is a sufficient reward for management skills, risk taking, and land devoted to the enterprise. It should be noted that since noncash items may be included in fixed costs, profits as shown here are not the same as net cash or operating receipts as shown in a cash flow statement.

Dairy Goat Operations

Most often, dairy goat enterprises mainly supplement income and milk consumption at home. If a dairy goat operation is primarily viewed as a hobby, the discussion of economics may be of lesser importance than a commercial dairy. That is not to say that an enterprise budget as a decision tool is not needed for home dairies. A small herd producing milk is sometimes an expensive hobby and an enterprise budget will help illustrate why.

The whole economic emphasis changes when the discussion turns to a commercial dairy. If plans are to go public with milk sales or sell to a commercial processor while building the herd to over 50 head, the farm manager is faced with a different set of resource requirements needed to develop a productive and profitable enterprise system. An enterprise budget would be an essential tool in evaluating whether such an alternative would be to the manager's financial advantage. Farm management skills and knowledge are a very integral aspect of success with commercial dairies. The ability to bear losses from business risk, a large capital base, and well trained labor are also important considerations.

As illustrated in Table 1, the producer is faced with a decision whether a return of \$10,000 per 100 goats is satisfactory. Does it contribute enough revenue to general farm maintenance and family living? Is it adequate compensation for management efforts? If the returns are high enough, then resources may be committed to the operation in the long term.

The budget in Table 1 allows break-even analysis for the defined enterprise. Break-even analysis is a useful technique in balancing demand (revenue) and cost factors. Revenue per output is found in terms of price times production volume relationships. If one revenue component is kept constant, what would the other part need to be for that item's revenues to equal costs? For example, the break-even costs for producing 20 hundredweights (cwt.) of milk per doe when considering only operating inputs (and leaving other receipts constant) would be \$14.86 per cwt. In other words, this is the market price of milk one would need just to cover variable costs in the operation while separating out other revenue items from consideration. This break-even price is found by subtracting other revenues per doe unit (\$47.50) from total variable costs (\$344.71) and then dividing by the production level of 20 cwt.. Revenues of \$297.21 (20 cwt. x \$14.86/cwt.) is equal to \$297.21 (adjusted operating costs) and net returns above total operating costs are zero. To determine the break-even production level needed to cover operating inputs, one would divide the adjusted variable costs (\$297.21) by the budgeted milk price per cwt. of \$24 to get approximately 12.4 cwt. of milk required. Similar calculations using total variable and fixed costs may be made when determining break-evens to cover all specified costs.

Risk assessment recognizes that production and price parameters are subject to considerable variation. Production and market uncertainty exist in goat operations due to the inability to accurately forecast productivity and prices. The producer should consider a range of outcomes in addition to average or expected values. Scenarios that produce unfavorable returns will jeopardize cash flow and financial solvency.

Table 3 provides a sensitivity of expected returns above operating costs at various milk price and production combinations. Each producer would need to evaluate their options given individual financial strengths, track record/experience, price outlook, and wiliness to assume risk.

Table 3. Sensitivity of Milk Production versus Price on Per Head Net Returns Above Total Operating Costs for a 100 Head Commercial Dairy Goat Herd.*

Milk Prod. (in cwt.)	-10% \$21.60	-5% \$22.80	Expected Price/cwt. \$24.00	+5% \$25.20	+10% \$26.40
-20% 16.0	\$48.39	\$67.59	\$86.79	\$105.99	\$125.19
-10% 18.0	\$91.59	\$113.19	\$134.79	\$156.39	\$177.99
Expected 20.0	\$134.79	\$158.79	\$182.79	\$206.79	\$230.79
+10% 22.0	\$177.99	\$204.39	\$230.79	\$257.19	\$283.59
+20% 24.0	\$221.19	\$249.99	\$278.79	\$307.59	\$336.39

Break-even milk production/cwt. above total operating costs is 12.38 using the \$24.00 price of milk.

Break-even milk price/cwt. above total operating costs is \$14.86 using a production of 20 cwt.

* As shown in Table 1. Break-even price and production are calculated to cover total operating costs only while keeping revenues from kid and cull sales constant.

Meat Goat Operations

Although meat may be produced from Angoras and dairy goats, other goats are raised exclusively for this purpose. Income from meat goat production may not generate as much income as other livestock, except in areas where land areas will not support other grazing livestock such as beef cattle. Many herds are utilized for smaller land areas where brush or weeds are a problem. As with dairy goat operations, there are a number of management practice considerations that influence profitability more than perhaps buildings and equipment.

Due to a lack of a developed nationwide marketing system in the United States, prices tend to vary widely and fluctuate seasonally. However, goat meat is favored by a number of ethnic groups in this country and many producers cater to these population centers on an individual basis. Improved production practices and management techniques will be needed to insure profitability within the commercial production sector. On the demand side, meat quality standards will need to be in place before national distribution systems develop.

In Table 2, revenues are sufficient to cover all variable costs and a portion of the fixed costs. However, returns above all specified costs are negative. The enterprise would not be self-supporting in the long run and is not rewarding the operator financially for management skills. If meat goats are viewed as a hobby or for home consumption, then once again, economics may play a lesser role in deciding whether to produce or not. Many producers in this situation realize that the operation may not “pay for itself”, but that is a sacrifice they are willing to make. However, if long-run returns appear unsatisfactory, the best decision may be to exit the enterprise and employ resources in a different enterprise or investment.

The meat goat budget also allows a break-even analysis for this enterprise. One could determine break-even costs above operating cost when separating fed kid revenues from culled does. For example, when considering only male kid production (and keeping other receipts constant), the break-even price per male kid would be close to \$30. This is found by dividing adjusted operating costs ($\$43.84 - \$24.32 = \$19.52$) by 0.65. Once again, revenues of $\$19.52$ ($\$30/\text{hd.} \times 0.65$) equals total operating costs (adjusted by subtracting other revenues not in consideration). Therefore, net returns above total operating costs are zero.

Production and price uncertainty will also impact a meat goat operation. Several “what-if” scenarios consisting of male kid prices and overall kidding percentages are shown with their effects on net returns above operating costs in Table 4.

Table 4. Sensitivity of Kid Crop Percentage versus Male Kid Price on Per Head Net Returns Above Total Operating Costs for a 100 Head Meat Goat Herd.*

Kid Crop %	-10% \$40.50	-5% \$42.75	Expected Price/hd. \$45.00	+5% \$47.25	+10% \$49.50
0.8 of Exp. 115%	-\$3.19	-\$2.02	-\$0.86	\$0.31	\$1.48
0.9 of Exp. 130%	\$1.77	\$3.08	\$4.39	\$5.70	\$7.02
Expected 144%	\$6.72	\$8.18	\$9.64	\$11.10	\$12.56
1.1 of Exp. 158%	\$11.68	\$13.29	\$14.89	\$16.49	\$18.10
1.2 of Exp. 173%	\$16.64	\$18.39	\$20.14	\$21.89	\$23.64

Break-even kid crop percentage above total operating costs is 117 using the \$45.00 price per male kid.

Break-even male kid price per head above total operating costs is \$30.12 using the 144% kid crop.

* As shown in Table 2. Break-even price does take into account adjustments in female sales while keeping other production parameters constant. Break-even kid crop percentage assumes a constant price structure from other revenue sources with respect to male kid prices.

Partial Budgets

The third type of budget that is useful in farm management and planning is the partial budget. Partial budgets reveal the effects of a specific change from an existing operation. It only considers the net economic effects of a proposed change and its impact on the total farm budget.

For example, one may consider kid sales at weaning versus at 90 days postweaning. Will the cost savings more than offset a loss in revenues? A partial budget format as shown below helps determine the positive and negative economic effects.

If I Sell Kids at Weaning Instead of 90 Days Later.

<i>Additions to Income</i>		<i>Subtractions from Income</i>	
Added Receipts Kid sales at weaning weight of 15-20 lbs.		Added Expenses None, assuming marketing expenses are constant.	
Reduced Expenses Expenses associated with feeding kids 90 more days.		Reduced Receipts Kid sales at heavier weights, approx. 65 lbs.	
Total Additions	\$\$\$	Total Subtractions	\$\$\$
		Net Change of selling weaned vs. heavier kids	

For more information, please refer to OSU F-139, "Budgets: Their Use in Farm Management".

Sources of Budget Information

To enhance their use as a decision aid, goat budgets should be based on the best information possible. And many times, that begins with the operator's own records. The sample budgets previously discussed may be tailored to fit an individual producer's operation. Their reliability as a planning tool is only as good as the quality of the data.

Other sources of information are:

1. Books on goat husbandry and industry.
2. Goat organizations.
3. Other goat producers/breeders.
4. University specialists, educational materials, and meetings.
5. Goat web sites on the Internet.

Oklahoma State University crop and livestock enterprise budgets are available via the Internet, disks, or paper copies. Front page budget summaries in Excel spreadsheet format can be found on the Internet at http://www.okstate.edu/OSU_Ag/asnr/agec/Budgets/index.htm. Spreadsheet budget summaries on diskettes are available for a fee. Paper copies with front and back page formats similar to the budgets shown in Tables 1 and 2 are also available at a fee. To request additional information or to order, contact:

Mike Hardin
Extension Farm Management Specialist
Department of Agricultural Economics
532 Agricultural Hall
Stillwater, OK 74078
405-744-9836

Budget Limitations

Budget projections may become incomplete or unrealistic resulting in little or no value to the producer or lender if adequate farm records are not available. It is also important to understand that 'best estimates' are influenced by production and price uncertainty. Everything doesn't always proceed just like you planned it. Identifying the potential sources of risk and reducing potential unpleasant surprises will result in fewer repayment problems in the future.

Budget preparation is also time consuming and hard work. Who has time to do budgets when work has to be done outside? Sitting down and documenting creditworthiness through budget planning can generate major dividends. Not only is it important to work hard, but to work smart.

Summary

Budgets, whether they are whole-farm, enterprise, or partial, are a management tool that is invaluable when evaluating the profit potential of the farming business. Although managers lack the information needed to make perfect decisions, they are forced to make decisions on the basis of information available and must accept the risk associated with that decision. Knowledge of budgeting and the ability to use them will help them make the right decision.

Two goat budgets developed at Oklahoma State University were shown to demonstrate the basic economic concepts and components of an enterprise budget. Their apparent profitability or lack thereof was not meant to mislead individuals into believing that dairy goats are always more successful than meat producing ones. They are only intended to be used as guidelines for the kinds of expected costs and returns typical with these operations. Alternatives that appear profitable for one producer may not work for another. Every goat producer's experience levels, managerial abilities, and willingness to assume risk are different. Because of these variations, each budget will need to be examined in detail to see if it is representative of his unique situation. The budgeting process is a continuous one and requires hard work. But it has become a prerequisite for survival in the goat industry.

The proper citation for this article is:

Sahs, R. 1998. Goat Farm Budgeting. Pages 45-57 in Proc. 13th Ann. Goat Field Day, Langston University, Langston, OK.